

## CLAIMS

1. A rolling bearing including a race and a rolling element,  
at least one member of said race and said rolling element having a nitrogen-  
5 enriched layer in its surface layer, a surface layer portion containing austenite crystal  
grains having a grain size number of at least 11, and a steel forming the member having a  
position exhibiting HRC50 in a hardenability test (JISG0561) apart from a quenched end  
by a distance of at least 12.7 mm (8/16 inch).
- 10 2. A rolling bearing including a race and a rolling element,  
at least one member of said race and said rolling element being formed of a steel  
containing 0.8-1.5 wt% of carbon, 0.4-1.2 wt% of Si, 0.8-1.5 wt% of Mn, and 0.5-1.8  
wt% of Cr, and having a nitrogen-enriched layer in its surface layer, and a surface layer  
portion containing austenite crystal grains having a grain size number of at least 11.
- 15 3. The rolling bearing according to claim 2, wherein a concentration of  
nitrogen of said surface layer is 0.05-0.7wt%.
4. The rolling bearing according to claim 2, wherein a value of specific surface  
20 area represented as (a surface area/ a volume) of said at least one member is not more  
than 0.6.
5. A heat treatment method for steel, comprising the steps of: carbonitriding or  
nitriding at 810-950°C a part formed of a steel containing 0.8-1.5 wt% of carbon, 0.4-  
25 1.2 wt% of Si, 0.8-1.5 wt% of Mn, and 0.5-1.8 wt% of Cr, the steel having a position  
exhibiting HRC50 in a hardenability test (JISG0561) apart from a quenched end by at  
least 12.7 mm; subsequently cooling the part to a temperature range lower than a  
transformation point A1 of said steel; and subsequently heating the part again to a

quenching temperature range not lower than the transformation point A1 and lower than a temperature used for said carbonitriding or nitriding, to quench the part.

- 5           6.   The heat treatment method for steel according to claim 5, wherein the quenching temperature range not lower than said transformation point A1 and lower than the temperature used for said carbonitriding or nitriding is 750-810°C.